TWN4 Palon Compact S M LF HF

USER MANUAL
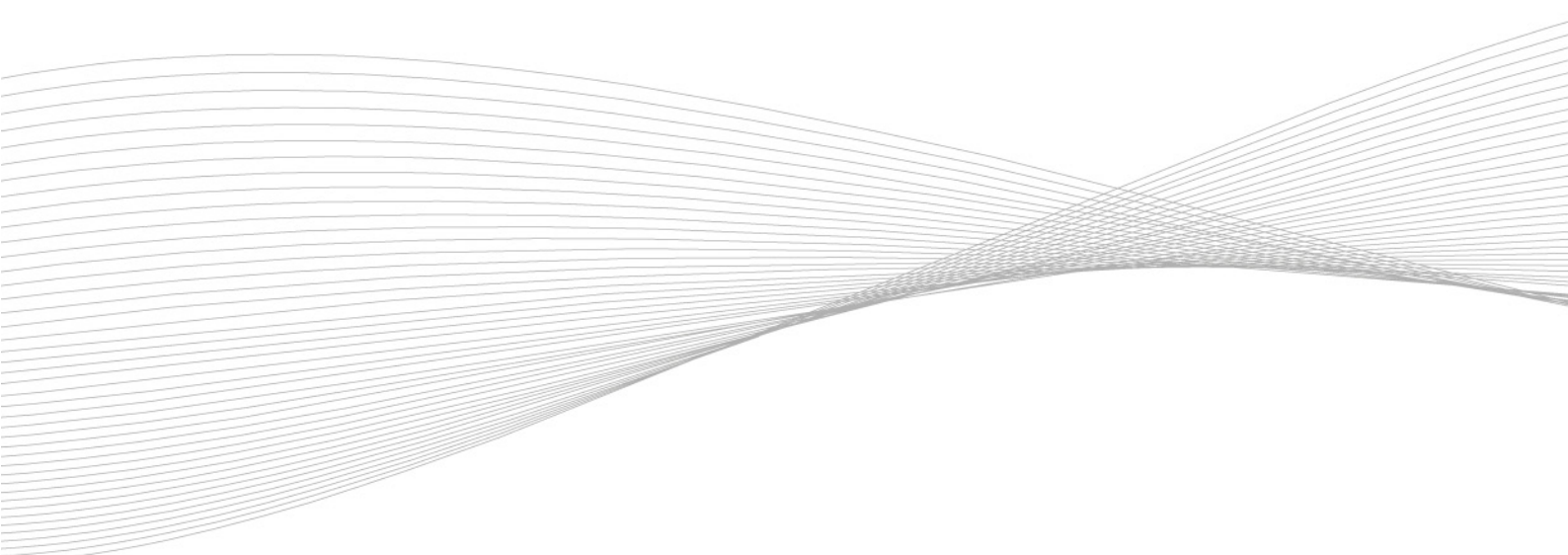
ELATEC
RFID Systems

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1 INTRODUCTION

1.1 ABOUT THIS MANUAL

This user manual is intended for the user and enables safe and appropriate handling of the product. It gives a general overview, as well as important technical data and safety information about the product. Before using the product, the user should read and understand the content of this manual.

For the sake of better understanding and readability, this manual might contain exemplary pictures, drawings and other illustrations. Depending on your product configuration, these pictures might differ from the actual design of your product.

The original version of this manual has been written in English. Wherever the manual is available in another language, it is considered as a translation of the original document for information purposes only. In case of discrepancy, the original version in English will prevail.

1.2 ELATEC SUPPORT

In case of any technical questions or product malfunction, refer to the ELATEC website (www.elatec.com) or contact ELATEC technical support at **support-rfid@elatec.com**

In case of questions regarding your product order, contact your Sales representative or ELATEC customer service at **info-rfid@elatec.com**

2 SAFETY INFORMATION

Transport and storage

- Carefully observe the transport and storage conditions described on the product packaging or other relevant product documents (e.g. data sheet).

Unpacking and installation

- Before unpacking and installing the product, this manual and all relevant installation instructions must be read carefully and understood.

- The product might show sharp edges or corners and requires a particular attention during the unpacking and installation.
  Unpack the product carefully and do not touch any sharp edges or corners, or any sensitive components on the product.
  If necessary, wear safety gloves.

- After unpacking the product, check that all components have been delivered according to your order and delivery note.
  Contact ELATEC if your order is not complete.

- In case the product is equipped with a cable, do not twist or pull the cable excessively.

- In case the product is equipped with a cable, the cable may not be replaced or extended.
  ELATEC excludes any liability for damages or injuries resulting from the use of the product with a cable extension or a replaced cable.

- The product is an electronic device whose installation requires specific skills and expertise.
  The installation of the product should be done by trained and qualified personnel only.

Handling

- To comply with the applicable RF exposure requirements, the product should be installed and operated with a minimum distance of 20 cm to any user's/nearby person's body at all times. Refer to Chapter "Compliance statements" for further information about RF exposure compliance.

- Depending on your product configuration, the product might be equipped with one or more light-emitting diodes (LED).
  Avoid direct eye contact with the blinking or steady light of the light-emitting diodes.

- The product has been designed for use under specific conditions, e.g. in a specific temperature range (refer to the product data sheet).
  Any use of the product under different conditions might damage the product or alter its reading performance.

- The use of other RFID devices in direct vicinity to the product, or in combination with the product might damage the product or alter its reading performance. In case of doubts, contact ELATEC for more information.

- The user is liable for the use of spare parts or accessories other than the ones sold or recommended by ELATEC.

ELATEC excludes any liability for damages or injuries resulting from the use of spare parts or accessories other than the ones sold or recommended by ELATEC.

- Like most electronic devices, RFID systems generate electromagnetic waves that can vary in amplitude and frequency. It is generally known and accepted that some RFID devices might potentially interfere with personal medical devices, like pacemakers or hearing aids.
  TWN4 Palon Compact S M LF HF fulfills general radio and EMC requirements. However, users with a pacemaker or any other medical device should use TWN4 Palon Compact S M LF HF carefully and refer to the information given by the manufacturer of their medical devices before using TWN4 Palon Compact S M LF HF or any host device containing TWN4 Palon Compact S M LF HF.

Maintenance and cleaning

- Any repair or maintenance work should be done by trained and qualified personnel only.
  Do not try to repair or carry out any maintenance work on the product by yourself.
  Do not allow any repair or maintenance work on the product by an unqualified or unauthorized third party.

- The product does not need any special cleaning.
  Do not use any detergents or other cleaning agents on the product.

Disposal

- The product must be disposed of in accordance with applicable local regulations.

Product modifications

- The product has been designed, manufactured and certified as defined by ELATEC.
  Any product modification without prior written approval from ELATEC is prohibited and considered improper use of the product. Unauthorized product modifications may also result in the loss of product certifications.

If you are unsure about any part of the safety information above, contact ELATEC support.

Any failure to comply with the safety information given in this document is considered improper use. ELATEC excludes any liability in case of improper use or faulty product installation.

3 PRODUCT DESCRIPTION

3.1   INTENDED USE

TWN4 Palon Compact S M LF HF is an RFID module that allows users to read and write RFID media in the 125 kHz (LF) and 13.56 MHz (HF) frequencies for identification purposes. The product is intended to be integrated into a host device.

Any use other than the intended use described in this section, as well as any failure to comply with the safety information given in this document, is considered improper use. ELATEC excludes any liability in case of improper use or faulty product installation.
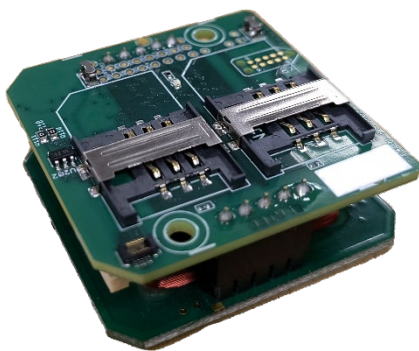
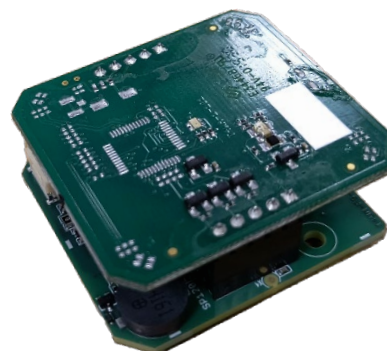## 3.2   TECHNICAL SPECIFICATIONS

Fig. 1 - top view

Fig. 2 - bottow view

Frequencies	125 kHz (LF) / 13.56 MHz (HF)
Antennas	Integrated RFID LF antenna Dimensions: 31.00 x 31.00 mm / 1.22 x 1.22 inch Number of turns: 88 Integrated RFID HF antenna Dimensions: 41.00 x 38.00 mm / 1.61 x 1.50 inch Number of turns: 3
Dimensions (L x W x H)	PCB board, twin stack: approx. 40.65 x 43.85 x 28.20 mm / 1.60 x 1.73 x 1.11 inch
Power	USB: 4.3 V – 5.5 V ES1/PS2 classified power source according to IEC 62368-1, short-circuit current < 8 A
Transmit power	125 kHz: 26 mW, 14.1 dBm (Rout 10 Ohm, RL 5 Ohm, U0pp = 3.3V) 13.56 MHz: 13.9 mW, 11.4 dBm (Rout 20 Ohm, RL 50 Ohm, U0pp = 3.3V)
Current consumption	Operating: 160 mA @ 5 V typically / Idle: 50 mA @ 5 V typ. / Peak: 250 mA @ 5 V typ.
Temperature ranges	Operating: -25 °C up to +80 °C / -13 °F up to +176 °F Storage: -40 °C up to +85 °C / -40 °F up to +185 °F
Relative humidity	5% to 95% non-condensing
R/W distance	LF and HF: up to 100 mm / 4 inch, depending on environment and transponder
MTBF	500,000 hours
Weight	Approx. 25 g / 0.88 oz

Refer to the product data sheet for additional technical specifications.

3.3   FIRMWARE

The product is delivered ex-works with a specific firmware version, which is displayed in the firmware string on the product label.

ELATEC   YYYYMMDD
S/N:
Model:TWN4 Palon Compact S M LF HF
D/B1.64/NKF4.64/STD2.04
FCC ID: WP5TWN4F25
IC: 7948A-TWN4F25
HVIN: EL20233
UK CA
CE
Made in Germany   DE81523527

Fig. 3 - exemplary illustration

3.4   LABELING

The product is delivered ex-works with a label attached on its bottom side. This label contains important product information (e.g. serial number) and may not be removed or damaged. In case of a label wear-out, contact ELATEC.

Once the product has been integrated into a host device, the label might not be visible anymore. In this case, specific requirements related to the labeling of the host device might apply. For more information, refer to the TWN4 Palon Compact S M LF HF integration manual and to the documentation related to the host device.

3.5   ACCESSORIES

The product can be delivered with the following optional components:

Maintenance and configuration cable (USB)

4 MODE OF OPERATION

The mode of operation described in the following chapter is based on a standard ELATEC RFID reader module equipped with two LEDs. Depending on your product (number of LEDs, installed firmware, etc.) and in case the product settings have been modified with the ELATEC AppBlaster tool, the information below might differ from your product configuration when in operation. In particular, the color and sequence of the LEDs on your product might be different.

4.1 OPERATING MODE

To start operating TWN4 Palon Compact S M LF HF ("reader module"), it simply has to be connected directly to a host device.

4.2 POWER UP

Once the reader module is connected to the host device, it detects the type of communications cable (USB), with which it is connected to the host.

4.3 ENUMERATION

Once the reader module has been powered up, it waits for completion of the enumeration by the USB host. As long as the reader module is not enumerated, it is in a minimum power consumption mode, where both LEDs are turned off.

4.4 INITIALIZATION

After powering up and enumeration, the reader module turns on the built-in transponder reader logic. The green LED is turned on permanently. Some RFID modules need some kind of initialization, which is performed in this step. After successful initialization, the reader module sounds a short sequence, which consists of a lower tone followed by a higher tone.

4.5 NORMAL OPERATION

As soon as the reader module has completed the initialization, it enters the normal operation mode. During normal operation, the reader module searches for a transponder continuously.

4.6 DETECTION OF A TRANSPONDER

If a transponder is detected by the reader module, the following actions are performed:

- Send the ID to the host. By default, the reader module sends by emulating keystrokes of a keyboard.
- Sound a beep.
- Turn off the green LED.
- Blink the red LED for two seconds.
- Turn on the green LED.

Within the two seconds timeout, where the red LED is blinking, the transponder, which just has been recognized will not be accepted again. This prevents the reader module from sending identical IDs more than one time to the host. If during the two seconds timeout of the red LED a different transponder is detected, the complete sequence restarts immediately.

4.7   SUSPEND MODE

The USB version of the reader module supports the USB suspend mode. If the USB host signals suspend via the USB bus, the reader module turns off most of its power consuming peripherals. During this operation mode, no detection of transponders is possible and all LEDs are turned off. Once the host resumes to normal operation mode, this is also signaled via the USB bus. Therefore, the reader module will resume to normal operation too.

5 COMPLIANCE STATEMENTS

5.1 EU

Hereby, ELATEC GmbH declares that TWN4 Palon Compact S M LF HF complies with Directive 2014/53/EU. Refer to the copy of the EU declaration of conformity accompanying your product for more information.

5.2 FCC

FCC ID: WP5TWN4F25

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation. (except receivers associated with operation of a licensed radio service and stand-alone devices).

Caution

The Federal Communications Commission (FCC) warns the users that changes or modifications to the unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC §15.105 (b)

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

5.3 ISED / ISDE CANADA

IC: 7948A-TWN4F25

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:
1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage;

2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

5.4   RF EXPOSURE STATEMENT

The device complies with the RF exposure requirements for mobile and fixed devices (47 CFR 2.1091). However, the device shall be used in such a manner that the potential for human contact during normal operation is minimized.

APPENDIX

A – RELEVANT DOCUMENTATION

ELATEC documentation
- TWN4 Palon Compact S M LF HF data sheet
- TWN4 Palon Compact S M LF HF instructions for use
- TWN4 Palon Compact S M LF HF integration manual

External documentation
- Technical documentation related to the host system

B – TERMS AND ABBREVIATIONS

TERM	EXPLANATION
EMC	electromagnetic compatibility
HF	high frequency
LF	low frequency
MTBF	mean time between failures
PCB	printed circuit board
RFID	radio frequency identification
R/W	read/write (distance)
S/N	serial number

C – REVISION HISTORY

VERSION	CHANGE DESCRIPTION	EDITION
01	First edition	05/2024